

tissue of the gray substance shows meshes formed exclusively of nerve fibres, forming a network of the fibres. On the surface of the optic thalami, these bundles of fibres bend in opposite directions, forming a special arrangement of the meshes, as a network of the knots. Meshes or network of gray substance are an essential characteristic of the central parts, as much as a differing direction of the bundles of the fibres of the gray substance, and of the bundles of the nerve tubes of the white substance. From this it follows, that some of the nerve fibres of the gray substance curve or bend in the white substance in which they appear as the cylinder axis in the tubes of this substance. In nearly all the spinal cord, the general law of the structure of the central organs is observed, the fibres of the gray substance being in opposite direction to that of the tubes of the white substance. The nerve cells communicate by some of their prolongations in the group in which they are found, whether in the posterior or the anterior cornua. Some of the branches of the nerve cells, passing transversely to the axis of the spinal cord, bend inwards and become parallel to this axis, and go to form cylinder axes in the tubes of white substance. There are nerves which leave the central parts of the brain and spinal cord, as tubes, and others that are not so.

In cats, dogs, and rabbits the alterations produced by poisoning by nicotine were indicated by the extreme pigmentation and destruction of the nerve cells, and their prolongations only in the spinal cord where the vagus and hypoglossal nerves arise. The reservoirs also increase in size. Death is effected not only by chemically altering the metamorphosis of the whole organism, but by destroying the little organs such as the nerve cells, which are the origin of the nerves of the chief organs of life. Opium and chloroform act on the myeline, which instead of assuming the granular amorphous form has the appearance of little brilliant bodies.—*Brit. and For. Medico-Chir. Review*, April, 1865, from *Gazette Médicale de Paris*, December 24th, 1864.

2. *On the Rapidity of the Passage of Crystalloid Substances into the Vascular and Non-Vascular Textures of the Body.*—DR. HENRY BENCE JONES has communicated to the Royal Society the following results of some observations lately made by him on this subject:—

"It occurred to me that it might be possible to trace the passage of substances from the blood into the textures of the body by means of the spectrum-analysis, and with the assistance of Dr. Dupré some very remarkable results have been obtained.

"Guinea-pigs have chiefly been used for the experiments. Usually no lithium can be found in any part of their bodies. When half a grain of chloride of lithium was given to a guinea-pig for three successive days, lithium appeared in every tissue of the body. Even in the non-vascular textures, as the cartilages, the cornea, the crystalline lens, lithium could be found.

"Two animals of the same size and age were taken; one was given three grains of chloride of lithium, and it was killed in eight hours; another had no lithium; it was also killed, and when the whole lens was burnt at once no trace of lithium could be found. In the other, which had taken lithium, a piece of the lens  $\frac{1}{10}$ th of a pin's head in size, showed the lithium; it had penetrated to the centre of the lens.

"In another pig the same quantity of chloride of lithium was given, and in four hours even the centre of the lens contained lithium.

"Another pig was given the same quantity, and it was killed in two hours and a quarter. The cartilage of the hip showed lithium faintly, but distinctly. The outer portions of the lens showed it slightly; the inner portions showed no trace.

"To a younger pig the same quantity was given, and it was killed in thirty-two minutes. Lithium was found in the cartilage of the hip; in the aqueous humour; distinctly in the outer part of the lens, and very faintly in the inner part.

"In an older and larger pig, to which the same quantity was given, lithium after one hour was found in the hip and knee-joints very faintly; in the aqueous humour of the eye very distinctly; but none was found in the lens, not even when half was taken for one trial.

"Chloride of rubidium in a three-grain dose was not satisfactorily detected anywhere. When twenty grains had been taken, the blood, liver, and kidney showed this substance; the lens, when burnt, all at once showed the smallest possible trace; the cartilages and aqueous humour showed none, probably because the delicacy of the spectrum-analysis for rubidium is very much less than that for lithium.

"A patient who was suffering from diseased heart took some lithia-water containing fifteen grains of citrate of lithia thirty-six hours before her death, and the same quantity six hours before death. The crystalline lens, the blood, and the cartilage of one joint were examined for lithium: in the cartilage it was found very distinctly; in the blood exceedingly faintly; and when the entire lens was taken, the faintest possible indications of lithium were obtained.

"Another patient took lithia-water containing ten grains of carbonate of lithia five hours and a half before death: the lens showed very faint traces of lithium when half the substance was taken for one examination; the cartilage showed lithium very distinctly.

"I expect to be able to find lithium in the lens after operation for cataract, and in the umbilical cord after the birth of the foetus.

"A patient of Mr. Bowman's, with a double cataract, was given lithia-water with twenty grains of carbonate of lithia seven hours before the operation on one lens. Lithia was present in each particle of it. After seven days the other lens was examined, and no trace of lithia could be found in it."—*Med. Times and Gaz.*, May 13, 1865.

3. *On Some Laws of the Production of Twins.*—Dr. J. MATTHEWS DUNCAN has published (*Edinburgh Med. Jour.*, March, 1865) an account of some interesting investigations on this subject, in which he endeavours to demonstrate the following conclusions:—

"1. The largest number of twins is produced by women of from twenty-five to twenty-nine years of age; and on each side of this climax of fertility in twins there is a gradually increasing falling off in their number, as age diminishes on the one side and increases on the other.

"2. Twins are not regularly distributed among births generally; their production, therefore, is not subjected to the same laws as govern ordinary fertility.

"3. The mean age of twin-bearing mothers is greater than that of mothers generally.

"4. Twins increase in frequency as mothers become older. This forms a striking contrast to the fecundity of a mass of wives (not mothers) which diminishes as their age increases.

"5. Newly-married women are more likely to have twins the older they are.

"6. While the fecundity of the average individual increases with age till twenty-five is reached, and then gradually diminishes, there is some probability that the opposite is true, so far as regards twins alone, fertility in twins being greatest when fecundity is least, and *vice versa*.

"7. The actual number of twins born of a mass of women in different pregnancies decreases as the number of the pregnancy increases.

"8. The number of twins relatively to the number of children born in different pregnancies increases with the number of the pregnancy. In other words, a woman is more likely to have twins in each succeeding pregnancy than in the former pregnancy. The first pregnancy perhaps forms some exception to this rule.

"9. In an individual twin-bearing is, of course, a sign of high fertility at the time. It also, in a mass of women, shows a high amount of fertility, at least, till the time of the birth of the twins.

"10. It is probable, though not proved, that twin-bearing women have larger families than women uniformly uniparous."

<sup>1</sup> It is not easy to get a regular view of Hugenberger's statistics of twins. But a study of them leads me to entertain some doubt of this exceptional character of first pregnancies.